

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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## (54) SEATS WITH HEADRESTS

(71) We, SLUMBERLAND GROUP LIMITED, a British Company of Redfern Road, Tyseley, Birmingham 11, do hereby declare the invention for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to seats with headrests, and is primarily concerned with seats used in vehicles or intended for use in vehicles.

From one aspect the present invention consists in a seat with a back, and a headrest assembly comprising a headrest mounted above the back and provided with supporting means which extends downwards into or behind the back, and adjusting mechanism provided in or on the seat which is operable, independently of any adjustment for the back, to move the supporting means so as to adjust the height of the headrest relative to the seat, said mechanism comprising rotatable drive means connected to the supporting means through the intermediary of a direct mechanical coupling such that on rotation of the drive means the supporting means is raised or lowered.

The invention also consists in a head rest assembly for a seat with a back, comprising a headrest, supporting means for the head-rest, and adjusting mechanism the assembly being attachable to the seat to form the combination outlined in the last preceding paragraph; for although the headrest assembly would usually be incorporated in a seat during manufacture of the seat, it is within the scope of the invention to provide the headrest assembly as an attachment for existing seats.

It has been proposed to provide seats with adjustable headrests and of a kind in which the adjustment of the head-rest is effected by adjustment of the position of the back of the seat. The present invention, however, provides an arrangement enabling a headrest to be adjusted independently of the position of the seat back.

The invention is preferably applied to seats of the kind having a hollow back, the supporting means extending into the hollow interior

of the back, and the adjusting mechanism also being housed in the interior.

The adjusting mechanism may be manually operated or power-operated, as desired. Preferably the mechanism is such that it is incapable of being operated by manipulation of the headrest itself, so that when the mechanism is not in operation the headrest is retained in position without the need for separate retaining means.

The invention will now be described by way of example with reference to the accompanying drawings wherein:

Figure 1 is a perspective view of a headrest assembly embodying the invention, mounted on a bucket type vehicle seat which is indicated in chain-dotted lines;

Figure 2 is a rear view of the assembly shown in Figure 1; and

Figure 3 is a rear view of the assembly illustrating a modification.

The seat shown in Figure 1 is intended for use in a motor vehicle, the seat being mainly of conventional construction, having an upholstered seat squab 9 and an upholstered back 12.

It will be seen from Figures 1—3 of the drawings that the upholstery and outer parts of the back of the seat are portrayed by a ghosted chain-dotted outline 10, although the adjusting mechanism is fully exposed to view; this has been done for reasons of clarity only and it is to be understood that in these embodiments the adjusting mechanism and support means for the headrest are disposed within the back 12 of the seat.

A slit 13 is formed in the top edge 11 of the back 12, near the rear edge of the top, and extends the full width of the back 12. A flat rectangular support panel 14 parallel with the back of the seat 12 and slightly less wide than the slit 13, extends into the slit 13, and its side edges run in parallel, upright guide channels 15 fixed inside the back 12 so that the support panel 14 can slide in and out of the back 12. A headrest 16 is secured by any convenient means to the front of the upper

marginal part of the support panel 14. The headrest 16 extends for the full width of the support panel 14 and therefore for substantially the full width of the seat back 12, as illustrated in Figure 1. Further, it projects forward from the support panel 14 a distance substantially equal to the maximum thickness of the seat back 12 so that when the support panel 14 is in its lowermost position as shown in full lines in Figure 1 the headrest 16 rests on the top of the seat back 12 and forms an upward extension thereof. The headrest 16 has forwardly directed wings 17 at its ends so that when the headrest 16 is in its lowermost position the appearance of the seat back and headrest is somewhat similar to that of the back of a wing chair. The headrest is upholstered, and covered with a material similar to that with which the seat back is covered. The shape and construction of the headrest can obviously be varied as desired.

Adjusting mechanism is provided inside the lower part of the seat back for raising and lowering the support panel 14. This comprises drive means constituted by a reversible electric motor 25 secured to a frame member (not shown) in the seat back 12 and driving a pinion 26 through suitable reduction gearing. The pinion 26 constitutes the output of the drive means and is rotatable about a horizontal axis transverse to the seat. The pinion engages a rack 27 depending from the bottom of the support panel 14. The motor 25 is controlled by a three-way switch (not shown) mounted on the seat, on the dashboard, or in any other desired location, and preferably within reach of someone seated on the seat.

A modified form of assembly, illustrated in Figure 3, has a manually operable crank handle 32 at one side of the seat, the handle being operable by someone seated on the seat. The handle 32 is connected to a gear box 28 fixed inside the seat back 12 and having an output member in the form of a bevel gear 31 rotatable about a horizontal axis transverse to the seat. The bevel gear 31 drives a second bevel gear 33 connected to a nut 29 which co-operates with a screw-threaded rod 30 depending from the bottom of the support panel 14.

In each of these forms of assembly the arrangement is such that after adjustment the headrest 16 cannot be further adjusted by direct manipulation thereof as it is retained in place by the mechanism.

The invention can also be provided to existing seats. In this application of the invention however, the support panel and operating mechanism would normally be mounted on the outside of the seat back. This could readily be achieved by attaching the guide channels 15 to the framework of the seat back, the support panel 14 being adapted to move over the rear face of the seat back. The adjusting mechanism would be preferably attached to the seat framework beneath the seat, where it

would be out of sight but should this be impracticable it could be attached to the back or one of side of the seat.

Although the invention is described above in relation to bucket type seats it will be understood that it is also applicable to bench-type seats, there being two or three individually adjustable headrests arranged side-by-side along the top of a bench-type seat in a normal motor vehicle.

#### WHAT WE CLAIM IS:—

1. A seat with a back, and a headrest assembly comprising a headrest mounted above the back and provided with supporting means which extends downwards into or behind the back, and adjusting mechanism provided in or on the seat which is operable, independently of any adjustment for the back, to move the supporting means so as to adjust the height of the headrest relative to the seat, said mechanism comprising rotatable drive means connected to the supporting means through the intermediary of a direct mechanical coupling such that on rotation of the drive means the supporting means is raised or lowered.

2. A seat according to Claim 1 wherein the back is hollow and the supporting means extends into the hollow interior of the back, the adjusting mechanism also being housed in the interior.

3. A seat according to Claim 1 or Claim 2 wherein the supporting means comprises a panel which extends downwards through a slit in the top part of the back, the side edges of said panel being located in guide channels fixed inside the back.

4. A seat according to any of Claims 1 to 3 wherein the adjusting mechanism can be controlled or operated, as the case may be, by someone seated on the seat.

5. A seat according to any of the preceding claims in which the drive means has an output member rotatable about a horizontal axis transverse to the seat.

6. For a seat with a back, a headrest assembly comprising headrest, supporting means for the headrest, and adjusting mechanism the assembly being attachable to the seat in order to form the combination of Claim 1.

7. In or for a seat according to any of Claims 1 to 5, the headrest assembly claimed therein wherein the adjusting mechanism provided to move the supporting means is manually operated.

8. In or for a seat according to Claim 7 the headrest assembly wherein the mechanism comprises a manually rotatable input coupled to a gear box having an output adapted to turn a rotatable nut which co-operates with a screw-threaded rod depending from the head-rest.

9. In or for a seat according to any of Claims 1 to 5, the headrest assembly claimed therein wherein the mechanism provided to move the supporting means is power-operated.

10. In or for a seat according to Claim 9 the headrest assembly wherein the mechanism comprises a reversible electric motor driving a pinion through reduction gearing, the pinion engaging a rack depending from the headrest. 5
11. In or for a seat according to any of the preceding Claims the headrest assembly claimed therein, the mechanism being arranged such that, after adjustment, the headrest cannot be further adjusted by direct manipulation thereof as it is retained in place by the mechanism. 10
12. A seat substantially as hereinbefore described with reference to Figures 1 and 2, or Figure 3, of the accompanying drawings. 15
13. For a seat with a back, a headrest assembly comprising a headrest, supporting means for the headrest, and adjusting mechanism substantially as hereinbefore described with reference to Figures 1 and 2, or Figure 3 of the accompanying drawings. 20

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COMPLETE SPECIFICATION

1 SHEET

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